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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,983	03/22/2002	Bradford Craig Starkie	A-71191/DJB/WEN	3791

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EXAMINER

SKED, MATTHEW J

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/009,983	<b>Applicant(s)</b> STARKIE, BRADFORD CRAIG	
	<b>Examiner</b> Matthew J. Sked	<b>Art Unit</b> 2655	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20020322</u> | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: the section headings are missing.

Appropriate correction is required.

### ***Drawings***

2. The drawings are objected to because Figures 1-3 are missing descriptive labels on the blocks. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 29, 32 and 37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
5. Claims 29, 32 and 37 are drawn to a "program" *per se* as recited in the preamble and as such are non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760

(claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

7. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 18 states "said creating step", however, there is no creating step previously mentioned. For the purposes of examination it will be assumed the limitation should read --said generating step--.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-8 and 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Brown et al. (U.S. Pat. Pub. 2001/0013001).

As per claims 1 and 29-32, Brown teaches a method, system and development tool for developing an interactive system, including:

inputting application data representative of an application for said system, said application data including operations and parameters for said application (web browser receives information over the internet such as web pages in HTML and PML formats hence indicating the operations and parameters for the application, paragraph 12);

generating prompts on the basis of said application data (voice processor performs analysis of the web page information to generate verbal descriptions sent to the TTS synthesizer, paragraph 13); and

generating grammar on the basis of said application data (grammar generator generates a grammar using the web page information, paragraph 13).

Art Unit: 2655

10. As per claim 2, Brown teaches said prompts and grammar are generated on the basis of a predetermined pattern or structure for said prompts and grammar (TTS synthesizer has various voices it can output the speech, which are not inferred from the HTML page hence predetermined and the grammar may be precompiled, paragraphs 18 and 64).

11. As per claim 3, Brown teaches the grammar includes predefined grammar (part of grammar may be precompiled, paragraph 64).

12. As per claim 4, Brown teaches generating a dialogue state machine on the basis of said application data (application data is used to create a finite state machine to constrain the words to be recognized and the application data is used to generate a verbal description of the web page hence prompts of what is available to the user, paragraphs 17 and 21).

13. As per claim 5, Brown teaches said grammar and said state machine include slots defining data on which said interactive system executes the operations (prompt gives two options for email or voicemail hence two slots that actions would occur when spoken by the user, paragraph 71).

14. As per claim 6, Brown teaches said slots include value data representing the meaning of a phrase or term of a slot (must inherently have data linking the slot to the hyperlinks, paragraph 71).

15. As per claim 7, Brown teaches said application data is inputted in an application file, and the operations include a number of input and return parameters with parameter types (PML formatted pages are received and these pages define the control

commands and interface to operate web pages over the telephone hence defining all input and return parameters, paragraph 12).

16. As per claim 8, Brown teaches executing grammatical inference to enhance the grammar (removes redundancies in the grammar to simplify and enhance the grammar, paragraphs 61-63).

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 9-14, 17-24, 27, 28 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Zadrozny et al. (U.S. Pat. 5,937,385).

As per claims 9, 19, 37 and 38, Brown teaches a method, system and development tool for developing an interactive system, including processing rules of the grammar (generates grammar code that defines the rules, paragraph 62); merging equivalent symbols of the grammar (removes redundant state transitions that contain word labels hence merging them, paragraph 63); and wherein said rules define said slots and include said symbols (grammar code describes rules which would inherently define slots in an interactive system and define the finite state networks that contain the word labels, paragraphs 62 and 63).

Brown does not teach generating additional rules representative of repeated phrases.

Zadrozny teaches a system for generating speech recognition grammars that merges non-terminal symbols and the frequency of occurrence of these non-terminals are kept track of hence suggesting the phrases that make up the non-terminals are repeated, col. 5, line 58 to col. 6, line 13 and lines 34-49).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown generate rules representative of repeated phrases as taught by Zadrozny because repeated phrases tend to be important to the overall understanding of an utterance so making rules for these phrases would make the system more robust.

19. As per claims 10 and 20, Brown teaches said rules include slot specification rules including value data representing the meaning of a phrase or term of a slot (must inherently have rules linking the slot to the hyperlinks, paragraph 71).

20. As per claims 11, 21, 33 and 36, Brown does not teach the grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.

Zadrozny teaches the grammar has rules that define non-terminals and has rules defining the combination of the non-terminals hence making it hierarchical (col. 5, lines 5-28).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown have a hierarchical grammar with rules



Art Unit: 2655

including non-terminals as taught by Zadrozny because this would create the grammar in Backus-Naur form, which is a standard representation of grammar, hence making the grammar simpler to understand.

21. As per claims 12 and 22, Brown does not teach the rules generating step includes generating a non-terminal symbol rules from correlated symbols and slot specification rules.

Zadrozny teaches generating a non-terminal symbol rule from correlated symbols and slot specification rules (generates rules based on correlated non-terminal symbols and because these terminals when combined are used to recognize a command it would inherently include slot specification rules, col. 5, lines 5-28).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown to generate non-terminal symbol rules from correlated symbols and slot specification rules as taught by Zadrozny because it would create a representation for the combination of non-terminals hence allowing the system to recognize a phrase.

22. As per claims 13, 14, 23 and 24, Brown does not teach the merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns and determining whether symbols to be merged have compatible slot specification rules and return corresponding slots.

Zadrozny teaches merging interchangeable non-terminal symbols and identifying these symbols based upon the initial grammar rules and these rules would have

compatible slot specification rules because they would both be commands to more money (col. 5, line 58 to col. 6, line 13 and Fig. 9D).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown so the merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns and determining whether symbols to be merged have compatible slot specification rules and return corresponding slots as taught by Zadrozny because this would simplify the grammar hence allowing faster and more precise recognition.

23. As per claims 17, 27 and 34, Brown teaches the rules include a reference count representing the number of other rules that reference the rule (counts the non-terminals where the non-terminals reference other rules hence indirectly counting the number of rules that reference each rule, col. 6, lines 46-49).

24. As per claims 18, 28 and 35, Brown teaches the rules are determined on the basis of attribute constraints during said generating step (grammar may be partially precompiled hence the rest of the grammar would be generated using these constraints, paragraph 64).

25. Claims 15, 16, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Zadrozny et al. (U.S. Pat. 5,937,385) and Applicant's admitted prior art.

As per claims 15 and 25, neither Brown nor Zadrozny teaches the rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference.

Applicant's admitted prior art teaches using hyperparameters in grammar rules (page 11, lines 12-29).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown and Zadrozny so the rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference because, as taught in Applicant's admitted prior art, the use of the hyperparameters significantly reduces the amount of computation required as opposed to having to calculate and store rule probabilities (page 11, lines 12-29).

26. As per claims 16 and 26, Brown does not teach the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules.

Zadrozny teaches the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules (initial grammar rules which are related are merged to create new merged rules where the new rules have the same format as the initial rules, col. 5, line 58 to col. 6, line 13).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown so the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be

Art Unit: 2655

generated when one of said relationships exist between said rules as taught by Zadrozny because it would allow the rules to be merged more quickly.

### ***Conclusion***

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Martin (U.S. Pat. 5,642,519) teaches creating grammars for speech recognition. Surace et al. (U.S. Pat. 6,144,938) and Phillips et al. (U.S. Pat. Pub. 2005/0091057A1) teach using custom grammars in interactive voice response systems.

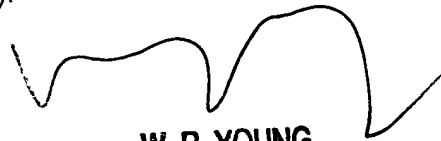
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2655

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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08/18/05



**W. R. YOUNG**  
**PRIMARY EXAMINER**